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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 19

Application Number: 09/191,577
Filing Date: November 13, 1998
Appellant(s): FREES ET AL.

Mark A. Hollingsworth
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed August 9, 2001.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-51 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,045,112	Kirkwood	4-2000
5,126,607	Merriman, Jr.	6/1992

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 6-8, 31, 33-34, 36-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Kirkwood (U.S. Pat. 6,045,112).

Regarding claims 1-4, 6-8, Kirkwood discloses a mounting interface (figures 1, 1A) for providing a steadfast relationship between a motor 22, 54, 60 and a baseplate 50, the mounting interface comprising at least three surface points 58 forming a single plane acting as a common boundary between the motor and the baseplate, the positions of the at least three surface points being selected to affect a vibrational characteristic of the motor (column 3, lines 54-62 and column 4, lines 44-47). Kirkwood further shows that the at least three surface points further comprise pads 58 and are coupled to the base plate and to the mount flange. Kirkwood also discloses that the at least three surface points are positioned at predetermined radial angles, have a surface area and formed using a predetermined material, to reduce acoustical noise (column 4, lines 44-47).

Regarding claims 31, 33-34, 36-38, Kirkwood discloses a method for reducing acoustic dynamic of a spindle motor, comprising forming a mounting interface between a spindle motor and a baseplate 50, the mounting interface comprising at least three surface points 58 (figure 1) forming a single plane acting as a common boundary between the spindle motor and the baseplate, positions of the at least three surface points being selected to affect a vibrational

characteristic of the motor (column 3, lines 54-62 and column 4, lines 44-47). Kirkwood further shows forming a mounting interface comprises three surface points formed by pads 58 and are coupled to the base plate and to the mount flange. Kirkwood also discloses that forming the at least three surface points are positioned at predetermined radial angles, have a surface area and formed using a predetermined material, to reduce acoustical noise (column 4, lines 44-47).

Claims 5, 16-23, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkwood.

Regarding claims 16-19, 21-23, Kirkwood discloses a mounting interface described supra. Kirkwood does not disclose the data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium and an actuator and a spindle motor for rotating the storage medium. The rationale is as follows: one of ordinary skill in the art would have been motivated to incorporate the mounting interface of Kirkwood into a data storage system comprising a storage medium, an actuator and a spindle motor for rotating the storage medium as it would reduce vibrations of the spindle motor as well as the acoustical noise.

Regarding claims 5, 20, Kirkwood does not disclose that the at least three surface points lower the resonant frequencies. Official Notice is given that it was notoriously old and well known to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. It would have been obvious to one of ordinary skill in the art at the time the

invention was made to lower the resonant frequencies by reducing the contact areas between the motor and the baseplate. The motivation would have been: lowering the resonant frequencies would prevent a possible damage to the motor and a disk attached to it.

Regarding claims 32 and 35, Kirkwood does not specifically disclose the step of forming the mounting interface on the baseplate or reducing the contact area between the mount flange of the spindle motor and the baseplate to lower the resonant frequencies. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Kirkwood on the baseplate or reduce the contact area between the mount flange of the spindle motor and the baseplate to lower the resonant frequencies (It is well known that the resonance frequency of the insulators 58 are below the resonance frequency of the motor 22). The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood on the baseplate (it is only rearranging the location of the mounting interface) or reduce the contact area between the mount flange of the spindle motor and the baseplate to lower the resonant frequencies as it would simplify the mounting of the motor while preventing possible damage to the motor and a disk attached to it.

Claims 9-15, 24-30, 39-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkwood in view of Merriman, Jr. (U.S. Pat. 5,126,607).

Regarding claims 9-15, 24-30, 46-51, Kirkwood discloses a mounting interface described above. Kirkwood does not disclose:

a) a damping ring between the at least three surface points or

b) a seal on the ring.

Merriman, Jr. discloses a motor vibration isolator (figures 1-8) with a mounting interface 10 comprising a damping ring 22-6, with a portion 22-3 disposed perpendicular to the single plane on an outer surface of the at least three points of the mounting interface and a seal 22-3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the mounting interface of Kirkwood with the damping ring and seal as taught by Merriman, Jr. as it would isolate the motor from the baseplate and provide a circular locating step (column 2, lines 23-27 and lines 40-45).

Regarding claims 39-45, Kirkwood does not disclose the steps of forming a damping ring between the at least three surface points or forming a seal on a portion at the outer surface of the at least three surface points. Merriman, Jr. discloses a motor vibration isolator (figures 1-8) with a mounting interface 10 comprising a damping ring 22-6, with a portion 22-3 disposed perpendicular to the single plane on an outer and a seal 22-3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Kirkwood with the step of forming a damping ring and seal as taught by Merriman, Jr. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the method of Kirkwood with the steps of forming a damping ring and a seal as taught by Merriman, Jr. as it would isolate the motor from the baseplate and provide a circular locating step.

(11) Response to Argument

Appellant asserts in page 9, lines 9-12:

> "Kirkwood does not teach, expressly or inherently, that the position of the protrusions (surface points) is selected for the purpose of affecting the vibrational characteristics of the motor."

The examiner respectfully points out that Kirkwood discloses that protrusions 48 and 58 are located to reduce vibrations (column 3, lines 55-61).

Appellant asserts in page 10, lines 5-7:

> "Kirkwood, as discussed in the previous section, does not suggest forming a mounting interface, wherein the position of the protrusions (surface points) is selected to affect the vibrational characteristics of the motor."

The examiner points out that Kirkwood discloses the position of the protrusions 48 (column 3, lines 55-58, proximate fastener 32) to affect the vibrational characteristics of the motor (reduce vibrations).

Appellant asserts in page 10, lines 22-28:

> "Kirkwood does not disclose that a predetermined material is chosen for the protrusions to reduce acoustical noise. Rather, Kirkwood merely discloses that the isolator, upper motor cover and lower motor cover are made of a flexible material, such as rubber or a like synthetic material. However, Kirkwood does not disclose that the protrusions that are "distributed over the exterior drive shaft side of the upper motor cover" are chosen to reduce acoustical noise. (See column 4, lines 3-4 and lines 51-57)."

The examiner points out that Kirkwood discloses in column 1, lines 33-40, that the vibrations can cause acoustical noise, thus any system that produce vibrations can produce acoustical noise. Kirkwood also points out that the selection of an appropriate isolating material is made in consideration of the requirements or needs (see column 7, lines 9-12).

Appellant asserts in page 11, second paragraph:

> "KIRKWOOD DOES NOT DISCLOSE, EXPRESSLY OR INHERENTLY, A MOUNTING INTERFACE COMPRISING A DAMPING RING DISPOSED ON THE INNER SIDE AND BETWEEN AT LEAST THREE SURFACE POINTS, THE DAMPING RING DISSIPATING DISTORTION ENERGY, POSITIONS OF THE AT LEAST THREE SURFACE POINTS BEING SELECTED SO AS TO AFFECT A VIBRATIONAL CHARACTERISTIC OF THE MOTOR AS RECITED IN CLAIMS 46."

The examiner points out that claim 46 is rejected under 35 U.S.C. 103(a) over Kirkwood in view of Merriman (see rejection above).

Appellant asserts in page 12, lines 8-16:

> "In particular, the Examiner concludes, without reliance on a supporting reference, that to lower the resonant frequencies by reducing the contact areas between motor and the baseplate is "well known" in the arts. Appellant respectfully asserts that a mounting interface including at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate, wherein positions of the at least three surface points being selected to affect a vibrational characteristic of the motor do not constitute facts outside of the record which are capable of instant and unquestionable demonstration as being "well-known" in the art."

The examiner points out a reference to Alexander et al (U.S. Pat. 5,811,821) showing a mounting interface (figure 1, column 5, lines 63-67 and column 6, lines 1-14)) including at least three surface points forming a single plane acting as a common boundary between the motor and the baseplate, wherein positions of the at least three surface points being selected to affect a vibrational characteristic of the motor are well known.

Appellant asserts in page 16, lines 15-19 and 24-27:

> "Further, in discussing a combination of Kirkwood and Merriman, the Examiner states that it would have been obvious to provide the mounting interface of Kirkwood with the damping ring and seal taught by Merriman

> because "it isolate[s] the motor from the baseplate and provides a circular locating step."
> "It is respectfully submitted that there is no such objective teaching in Merriman that leads "to the combination" of Kirkwood and Merriman, and the Examiner has pieced together aspects purportedly found in the prior art to arrive at the invention through hindsight reconstruction."

In response to Appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In addition, the examiner indicates that both references address the problem of vibrations and how to isolate them. Merriman's damping ring and seal would replace members 48 (which does not provide sealing) in Kirkwood's motor to provide damping a sealing.

Appellant asserts in page 14, lines 12-19:

> "Kirkwood, as discussed previously, does not disclose that a predetermined material is chosen for the protrusions to reduce acoustical noise, and merely discloses that the isolator, upper motor cover and lower motor cover are made of a flexible material,, such as rubber or alike synthetic material. Thus, Kirkwood does not suggest that the surface points are formed using a predetermined material, wherein the predetermined material is chosen to reduce acoustical noise. Therefore, Appellant respectfully submits that claim 22 is patentable over Kirkwood."

The examiner points out as above that Kirkwood discloses in column 1, lines 33-40, that vibrations can cause acoustical noise, thus any system that produce vibrations can produce acoustical noise; Kirkwood's invention is directed to reduce vibrations that can cause acoustical

noise. Kirkwood also points out that the selection of an appropriate isolating material is made in consideration of the requirements or needs (see column 7, lines 9-12).

Appellant asserts in page 14, lines 26-29:

> "Thus, in Kirkwood, the protrusions are disposed on the motor cover that is located between the motor and the frame. Kirkwood does not even consider forming the mounting interface on the baseplate (frame)."

The examiner points out that changing the position of the protrusions from the motor cover to the baseplate is within the capabilities of one of ordinary in the art.

Appellant asserts in page 17, last 3 lines and page 18, lines 1-6:

> "In contrast to Appellant's invention, as admitted in the final Office Action dated 4 January 2001, Kirkwood does not disclose a damping ring between the at least three surface points. Merriman fails to remedy the deficiencies of Kirkwood. Merriman fails to disclose at least a damping ring with a portion disposed perpendicular to the single plane on an outer surface of the at least three surface points of the mounting interface, the portion engaging with the baseplate to dissipate energy resulting from sheer distortion between the baseplate and the at least three surface points."

It is the position of the examiner that Merriman discloses the damping ring 22 in figure 8 and that due to its shape it meets all the limitations of perpendicularity with respect to the mounting interface.

Appellant asserts in page 18, lines 20-25:

> "Merriman fails to remedy the deficiencies of Kirkwood. Merriman fails to disclose at least a seal forming a barrier in a gap between the mount flange and the baseplate. Moreover, Merriman does not even mention a seal. At best, Merriman discloses a circular step insert that is located between and isolation member and a frame, not a mount flange and a baseplate as recited in Appellant's claims."

It is the position of the examiner that Merriman shows in figure 8 an insert 20 that structurally works as a seal between the mounting flange 12-1 (column 2, line 64) and frame 14 (baseplate).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

BRIAN E. MILLER
PRIMARY EXAMINER

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December 14, 2001

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